

DOCKET NO.: TALW-0180
Application No.: 09/805,841
Office Action Dated: May 5, 2003

**PATENT
REPLY FILED UNDER EXPEDITED
PROCEDURE PURSUANT TO
37 CFR § 1.116**

REMARKS/ARGUMENTS

Status of the Application

Claims 1-11 are pending and stand rejected. Amendments to claims 1 and 7 have been proposed. No claims have been added or deleted. Applicants respectfully request entry of the proposed amendments and reconsideration of the present application in view of these amendments and the following remarks.

Amendments to the Specification

Applicants have made amendments to the specification to correct minor informalities. Two corrections are made to the citations of Japanese Patent Publications so as to correctly recite the year designation of each publication. One amendment is made to correct a minor grammatical informality. Applicants respectfully request entry of the foregoing amendments.

Claim Rejections – 35 U.S.C. § 103(a)

Claims 1-11 stand finally rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Pat. No. 6,099,711 (Dahms), and further in view of U.S. Pat. No. 5,976,341 (Schumacher). Claims 1-3 and 5-10 also stand finally rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Pat. No. 6,129,830 (Senge), and further in view of Schumacher.

Applicants have amended claims 1 and 7 to more clearly recite the claimed invention and to place the application in condition for allowance. Applicants respectfully submit that the amendments to claims 1 and 7 do not introduce new issues after Final Rejection, as the

features described by the amendments find support in, for example, dependent claims 2, 5, 6, 8 and 10. Accordingly, a new prior art search is not necessitated.

In light of the foregoing amendments, Applicants respectfully submit that the Examiner's rejections are moot because Dahms, Schumacher and Senge, either alone or in combination, fail to teach or suggest every element of newly amended independent claims 1 or 7. Applicants respectfully submit that the claimed invention fills up microvia holes having a copper foil at the bottom, where the microvia holes are formed on a circuit board *in place of through holes*. In addition, the claimed invention *stirs* the metal plating solution to make it flow in parallel to a surface to be plated of the wiring board so as to fill up the microvia holes. Such features are not found in the cited references.

In contrast, Dahms discloses coating the surfaces of circuit boards having copper coatings, as well as the surface areas of circuit board borings. (*See* col. 11, ll. 44-48; claim 10). Dahms also discloses, in Example 1 of col. 11, l. 51 – col. 12, l. 25, that the “metal dispersion (coating thickness in the borings \times 100/coating thickness in the circuit board surface), was however only 55%.” Applicants respectfully point out that this means that the metal dispersion $\{(\text{coating thickness of the boring surface} / \text{coating thickness of the circuit board}) \times 100\}$ is 55%. Therefore, Dahms relates to the formation of *through hole plating*, rather than to the claimed formation of microvia holes. In addition, neither Schumacher nor Senge teaches or suggests microvia holes.

The Examiner cited col. 8, ll. 65-67; col. 10, ll. 41-43 and Fig. 3 of Schumacher as allegedly teaching flowing a metal solution parallel to a surface to be plated of a circuit board. The Examiner acknowledged in the May 5, 2003 Office Action that Senge fails to teach “a stirring unit [that] makes the metal solution flow parallel to a surface to be plated of

the wiring board.” Applicants respectfully contend, however, that Schumacher also fails to teach or suggest such a feature as claimed. The arrow mark 15 shown in Fig. 3 of Schumacher simply appears to be in parallel to the wiring board. Applicants respectfully submit that the arrow mark 15 shown in Fig. 3 neither teaches nor suggests any structure for stirring the plating solution so as to make the solution flow in parallel to a surface to be plated of the wiring board. Schumacher also fails to disclose an effect to be obtained by stirring the plating solution so as to make it flow in parallel to the wiring board. Therefore, one of skill in the art would not have been able to practice the claimed invention by combining Senge and Schumacher.

Accordingly, Applicants respectfully submit that claims 1-11 patentably define over Dahms and Schumacher, either taken alone or in combination. In addition, Applicants respectfully submit that claims 1-3 and 5-10 patentably define over Senge and Schumacher, either taken alone or in combination.

DOCKET NO.: TALW-0180
Applicati n No.: 09/805,841
Office Action Dated: May 5, 2003

PATENT
REPLY FILED UNDER EXPEDITED
PROCEDURE PURSUANT TO
37 CFR § 1.116

CONCLUSION

In view of the foregoing amendments and remarks, Applicants respectfully submit that the pending claims patentably define over the cited art. Accordingly, a Notice of Allowance is respectfully requested. In the event that the Examiner believes that the present application is not allowable for any reason, the Examiner is encouraged to contact the undersigned attorney to discuss resolution of any remaining issues.

Date: September 5, 2003



Christos A. Ioannidi
Attorney for Applicants
Registration No. 54,195

Woodcock Washburn LLP
One Liberty Place - 46th Floor
Philadelphia PA 19103
Telephone: (215) 568-3100
Facsimile: (215) 568-3439